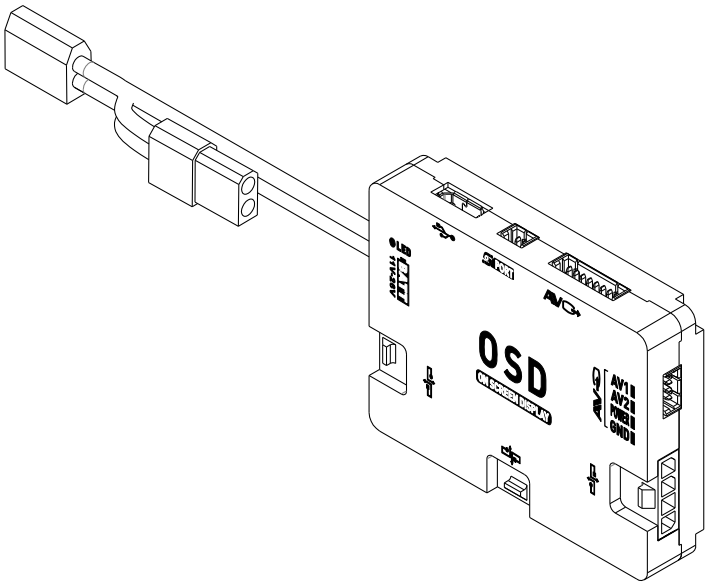
OSD (On Screen Display)

User Manual

V1.0

2012-09-12



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Disclaimer

Thank you for purchasing product(s) from DJI Innovations. Please read the instructions carefully before installing the hardware and software for this product, this will ensure trouble free operation of your OSD. Please use DJI products in accordance with the provisions of your local authorities and regulations.

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Introduction

DJI OSD is specially designed for DJI autopilot system during the FPV flight or other aero-modeling activates. DJI OSD can transmit video and OSD information in real time, which will help you to obtain the aircraft status information during a FPV flight. It can display power voltage, flight velocity, height, distance from the home point, horizontal attitude, GPS satellite number, etc. OSD and video information are superposed on the receiver, making OSD data clearly visible and bringing you a more involved flight experience.

DJI OSD should be used in conjunction with a DJI autopilot system. It supports two video input sources under PAL or NTSC mode, which can be selected remotely by an R/C transmitter switch. The R/C TX switch can also change the wireless video transmission channel remotely when user uses the wireless video transmitter module specified by DJI. The OSD supports online upgrades.

Specified autopilot systems for the OSD

Status	Autopilot system
Supported	WKM
Not yet supported	WKH、ACE ONE、ACE WAYPOINT

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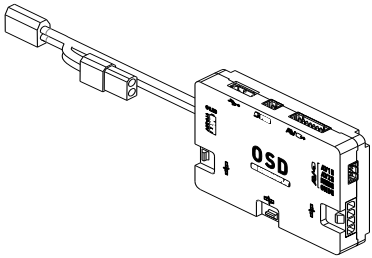
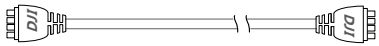
OSD Controller ×1

Connect the OSD controller to your DJI autopilot system via CAN-Bus. It communicates with the main controller, receives data from the main controller, superimposes the data with the video image, and then transmits the whole information via a transmitter.



CAN-Bus Cable ×1

Connect the OSD to your autopilot system through a CAN-Bus cable.



Video Input Cable ×1

Connect the OSD with video input source (i.e. camera or DJI Z15) for video input and power supply.

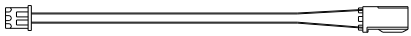
Only when you use the DJI Z15, you can use the bi-port cable directly for the connection. Otherwise, you can use the one-port cable for your own connection in accordance with the wiring diagram.

Video Output Cable ×1

Only when you use the wireless video transmitter module specified by DJI, you can use the bi-port cable to connect the OSD with the video transmitter module. Otherwise, you can use the one-port cable for your own connection in accordance with the wiring diagram.

2-PIN to 3-PIN Cable ×1

Connect the OSD with the R/C receiver through this cable. When there are two video signal inputs, it is used for the selection of video signal sources.



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Assembly

STEP1. Fix the OSD controller on your aircraft.

STEP2. Connect the OSD with the video signal source, wireless video TX module, DJI autopilot system and R/C receiver. Make sure the connection is correct in accordance with the wiring diagram.

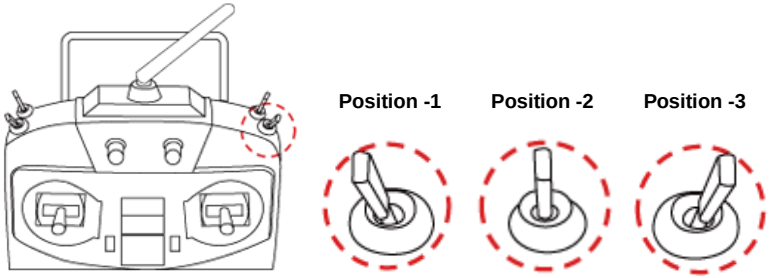
STEP3. Setup a 3-position switch on the R/C TX as the OSD control switch.

STEP4. Connect your wireless video RX module with the display screen.

3-Position Switch Control

Choose a 3-position switch channel and make sure you connect the correct channel of the receiver to the OSD switch port.

- Position -1→ Position -2, (hold position -2 for 1.5s): every toggle from Position -1 to Position -2 increases the channel of the wireless video transmitter module by 1 (from CH1 to CH8), only for the wireless video transmitter module specified by DJI.
- Position -3→ Position -2, (hold position -2 for 1.5s): toggle the switch to select the required video input, when there are two video inputs. Only the toggle from Position -3 to Position -2 can change the video input source.



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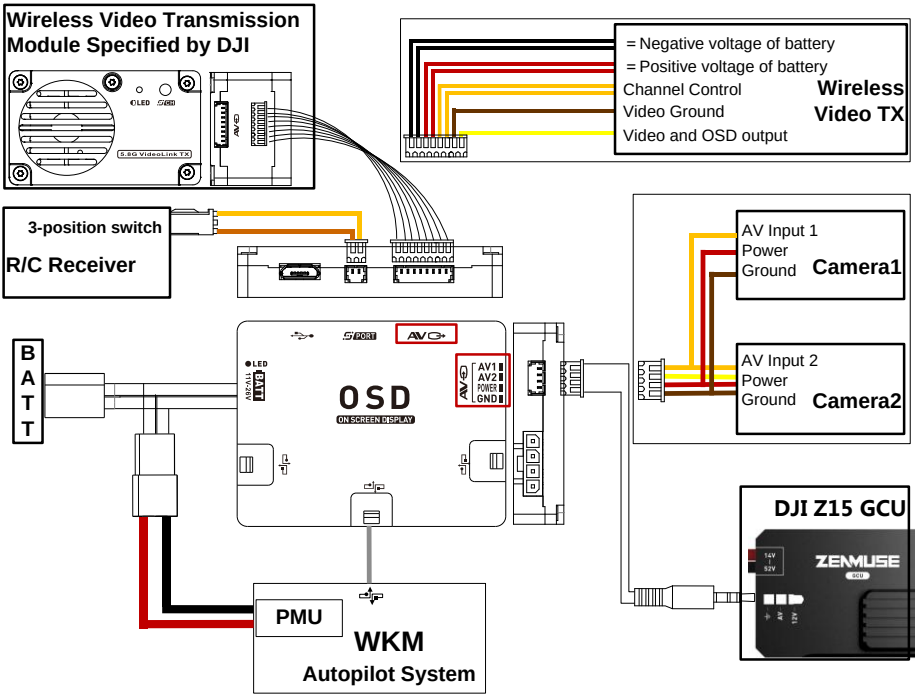


Video Output Port

- If you use wireless video transmission module specified by DJI, connect through the bi-port cable as shown.
- If you use your own module, please connect through the one-port cable according the pin description.
- **Channel Control :** Control signal for The video transmitter channel number (CH1.....CH8).If your video transmitter does not support this feature, then ignore this pin.

Video and OSD output: make sure this is correctly connected.

Video Input Port

- If you use the DJI Z15, please connect the OSD to the GCU of the Z15 through a bi-port cable as shown.
- If you use your own camera(s), please connect through the one-port cable according the pin description. **AV1、AV2** : You can select the required input. AV1 is default. **POWER :** supply power for video input source such as a camera.

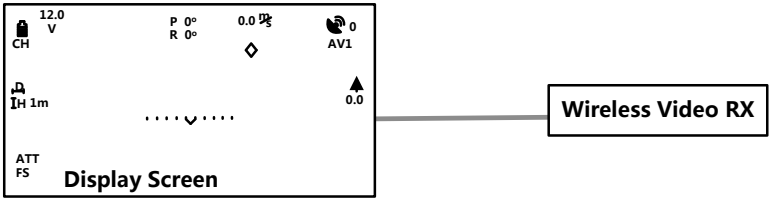
If battery is 3S Lipo then: Output Voltage = Input Votage

If 4S~6S then: Output Voltage=11.2V

Make sure the video input source is rated for this voltage, if not, and then please use a separate battery supply

Aircraft End

Ground End



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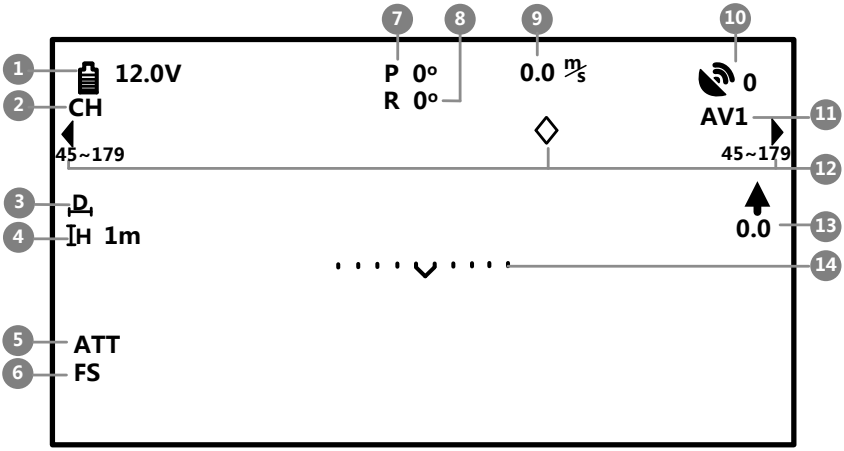
Display Description

The OSD information is displayed on screen as shown below.



NO	Function	Display	Description
1	Power voltage	、、blink	The aircraft power battery voltage, unit in V. ● : First level protection alarm ● blink : Second level protection alarm
2	Channel	**CH1、CH2、……CH8**	Wireless video transmission channel selection.
3	Distance between aircraft and home points		When the home point is successfully recorded, this item will show, unit in m.
4	Height	H	The vertical height between the aircraft and the take-off point, unit in m.
5	Control mode	**ATT、M、GPS**	The autopilot system control mode. ● ATT is Atti mode ● GPS is GPS Atti. mode ● M is Manual mode
6	Fail-safe mode	**FS、APT、GHome**	● FS is in Fail-safe mode ● APT is in ground station mode

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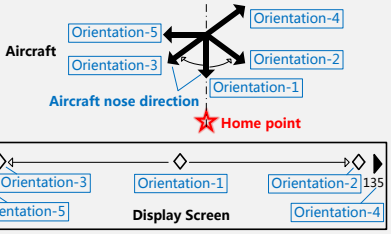
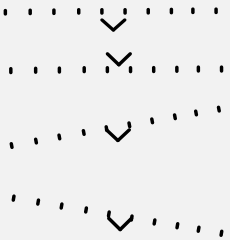
			● GHome is in go home status
7	Pitch attitude	P 0°	Positive value means the aircraft nose is up; negative value means the aircraft nose is down.
8	Roll attitude	R 0°	● Positive value means the aircraft is left. ● Negative value means the aircraft is right.
9	Flight velocity	0.0m/s	The aircraft horizontal speed.
10	GPS satellite	0	Number of GPS satellites acquired.
11	Video input	AV1、AV2	Video input source selected, AV1 or AV2 can be chosen.
12	Aircraft nose direction		Display the relative angle between aircraft nose and home point. The aircraft nose is pointing to the home point when the ◇ is in the middle of the screen, this may help you to bring back the aircraft by distinguishing the aircraft nose direction. 
13	Vertical velocity	0.0 0.0	▲ : Upward speed ▼ : Downward speed
14	Attitude line		Use attitude line for aircraft attitude observation ● craft up : ● craft down : ● craft left : ● craft right : 

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Test

Please use the following procedures to test your installation, in order to make sure the OSD is working properly.

STEP1. Ensure batteries are fully charged for R/C transmitter, OSD and all the other devices on your aircraft.

STEP2. Make sure all connections and wiring is correct and secure.

STEP3. Make sure the communication between the wireless video RX and TX modules is normal.

STEP4. Switch on the R/C transmitter, and power on the OSD and autopilot system.

STEP5. Check the LED indicator on the OSD. The OSD is powered when the LED is on.

STEP6. If there are two video inputs, please select an input by toggling the TX 3-position switch; otherwise, please skip to the next step.

STEP7. If you use the wireless video RX and TX modules specified by DJI, please select the channel you require by toggling the TX 3-position switch; otherwise, please skip to next step.

STEP8. Observe the display screen to make sure the video and OSD information are displaying on the screen.

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Appendix

Port Description

OSD	
BATT	Power Battery Input Port，input voltage range: 11V~26V
PORT	Control Signal Input Port，for wireless video module channel selection and video input source selection.
AV OUT	Video Signal Output Port ● AV-OUT：Video Signal Output, including both video and OSD information ● AV- GND：Video Signal Ground ● UART：UART signal，transmit the channel control signal to wireless video transmitter ● BATT+：Positive Voltage of Power ● BATT - ：Negative Voltage of Power
AV IN	Video Input Port，2 input sources are available ● AV1：Video Input Source 1 ● AV2：Video Input Source 2 ● POWER：11~13V, supply power for video input source ● GND：Ground
	Micro-USB Port：Connects the OSD with PC for firmware upgrade
	CAN-Bus：Communication of the OSD with autopilot system through CAN-Bus
LED	LED indicator for power

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Specifications

Performance Parameter	
Video Input Mode	PAL/NTSC
Video Output Mode	PAL/NTSC
Physical	
Temperature	-20~70°C
Size	52mm X 41mm X 11mm
Weight	42g
Hardware Supported	
Voltage	3S~6S
Current (Typical Value)	● 51mA@25.2V ● 87mA@12.6V
Rated Power	5W
Controller Supported	WKM
Software Supported	
Built-in Functions	● OSD Information Transmission ● Video Transmission , 2 Video Signal input Channels/Switchable ● Remote channel selection of the Wireless Video Transmitter Module, when using the video transmitter specified by DJI ● Built-in BEC ● DJI Z15 Supported

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Trouble Shooting

No.	What	Why	How to
1	Only OSD information , video signal loss.	Video input error.	Make sure the connection between OSD controller and video input port is OK.
2	Only video signal , OSD information loss.	Connection between OSD controller and autopilot system error.	Make sure the connection between OSD controller and DJI autopilot system is OK.
3	Both video signal and OSD information loss.	Signal transmission error.	● Make sure the Wireless Video Transmitter Channel Setting is correct. ● Make sure the communication between the video transmitter and the receiver is working correctly.

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